SO196 processing log
Multibeam echosounder data

a) Original data

The original data is held on hard drive on the data recording computer on board of R/V "Sonne". The data was recorded using the Kongsberg-Simrad online acquisition software, the time period of each raw data file is 30 minutes or less.

Data from the following sensors are included in the multibeam raw data:

Bathymetry data: Kongsberg-Simrad EM120
Position (GGA): Ashtech MD-XII GPS
Heading: Gyro Anschuetz STD4
Heave: Seatex MRU 5
Pitch/Roll: Seatex MRU 5
Sound velocity water column: CTD profile
Sound velocity at transducer: sound velocity sensor

The data set contains 522 raw data files of the sonar system Kongsberg-Simrad EM120 (approx. 3.8 GB), a total time period of approx. 260 hours and a total track length of approx. 620 nm. Compressing the data reduces the data volume with a factor of approx. 1.5. Several data gaps are caused by echosounder shutdowns.

b) Processing

The data set contains unprocessed raw data.

c) Data visualization

The GMT (Generic Mapping Tool) program version 4.1.4 was used to automatically create preview maps of the multibeam data. The multibeam data was not arranged to sets but every single data file was mapped separately. The format of the preview maps is PNG (Portable Network Graphic) format, see one example in Fig. 1. For naming the maps the same name as the raw data was used but with a different file name extension. The map was created out of unprocessed raw data and contains blunder in navigation and depth measurement.

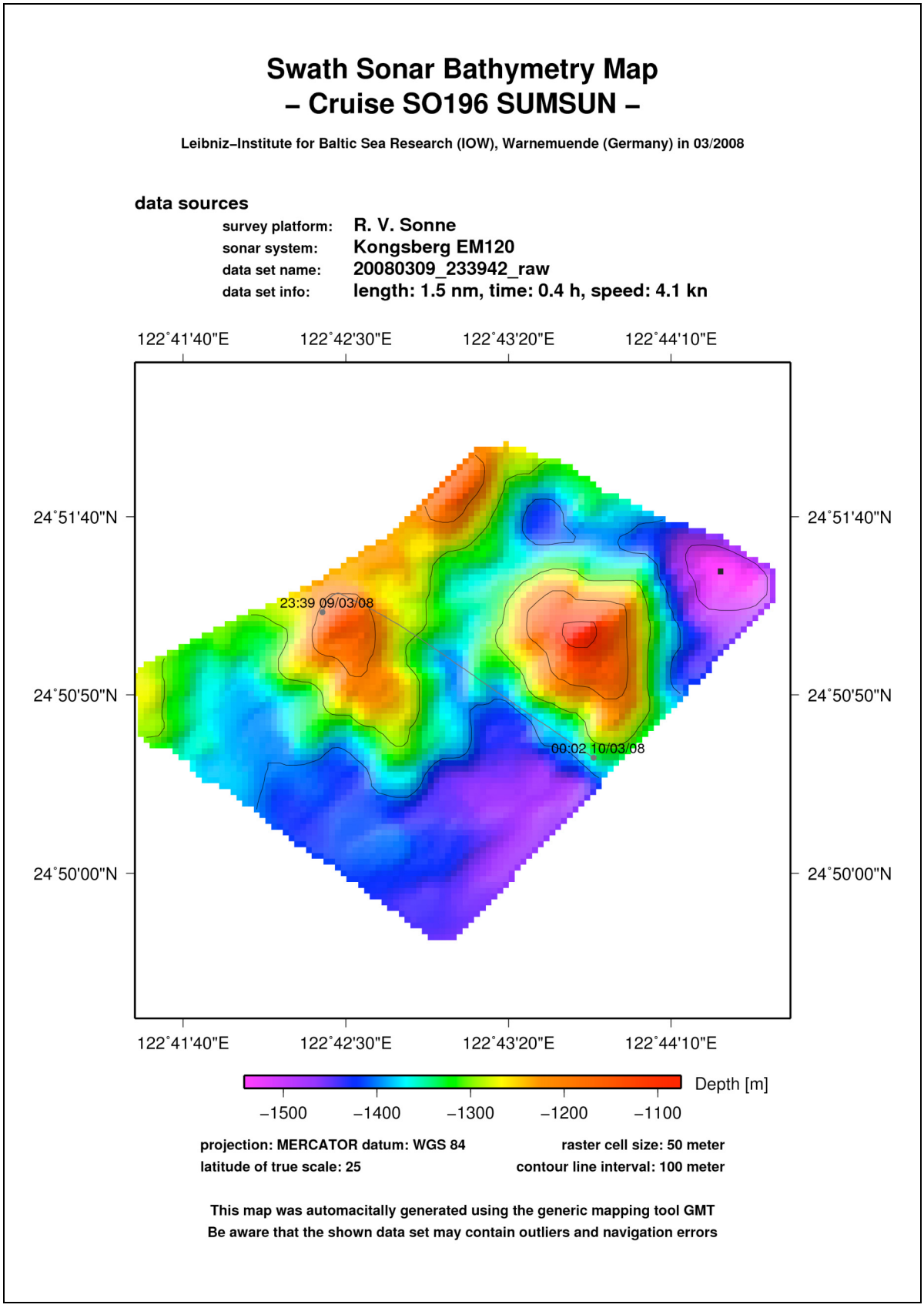

Figure 1: Example of a preview map of a multibeam raw data file.

SO196 processing log
Navigation data

a) Original data

The navigation data was extracted from the DVS DSHIP data base on board of R/V "Sonne". The original data is held on magnetic tapes as a backup of the DSHIP database. The data set contains 52 data files (26 with 1 second interval data, 26 with 10 second interval data), each with the navigation of one day.

The Raw data are:

GPS position from Ashtech MD-XII GPS
Speed from Ashtech MD-XII GPS
Heading from Gyro Anschuetz STD4
Depth from multibeam sonar system Kongsberg-Simrad EM120

b) Processing

I. Processing steps:

1. Extraction of source data from DSHIP data base
2. Automatic filtering of erroneous positions (minimum/maximum coordinates)
4. Visual control and editing of navigation data

II. Processed data:

Result of the processing is the verified navigation, held in ASCII table (tab delimited) with the following format:

Column 1: Latitude [decimal degree]
Column 2: Longitude [decimal degree]
Column 3: Date [Format: DD.MM.YYYY HH:MM:SS]
Column 4: Flag
Column 5: Speed [knots]
Column 6: Heading [degree]
Column 7: Depth [metres]

The flag string consists of four digits with the following meaning:

Digit 1:
- [0]: No position available
- [1]: Position based on sensor Ashtech MD-XII
- [2]: Position based on other GPS sensor

Digit 2:
- [0]: Position is not pitch corrected
- [1]: Position is pitch corrected

Digit 3:
- [0]: Position is not roll corrected
- [1]: Position is roll corrected

Digit 4:
- [0]: Position is not centered to the ships reference point (SRP)
- [1]: Position is centered to the SRP

III. Statistic

Data volume 1-second-interval data:	126 MB
Data volume 10-second-interval data:	14 MB
First data:	01.03.2008 22:00:00
Last data:	26.03.2008 01:20:00
Total number of positions after processing:	2063321
Total number of Ashtech MD-XII positions (Digit 1 = 1):	2063321 (100 percent)
Total number of positions with pitch correction:	0 (0 percent)
Total number of positions with roll correction:	0 (0 percent)
Total number of centered positions to SRP:	0 (0 percent)